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ABSTRACT

This monograph is the second in a series of semiannual reports that focus on research related to reading in secondary schools. The first section contains two literature reviews dealing with study habits and study skills related to reading. The second section offers two reviews related to prereading anticipation activities, including the advance organizer and the structured overview. (FL)

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RESEARCH ON READING IN SECONDARY SCHOOLS

A Semi-Annual Report
Monograph Number Two

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Edited by

Joseph L. Vaughan, Jr.
Paula J. Gaus

November, 1978

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A special thanks is due to Kenneth J. Smith, Head of the Reading Department for his support in producing this monograph. Further, we would like to thank our support staff, especially Lil Tolley, for all their assistance in preparing and compiling this issue.

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TABLE OF CONTENTS

	Page
Editorial Advisory Board	i
Table of Contents	ii
Submission of Manuscripts	iii
Purchase of Monograph	iv
Section One: Study Habits and Study Skills Related to Reading	
Joseph L. Vaughan, Jr., Assistant Professor Reading Department, University of Arizona	1
Study Skills and Study Habits: A Review of the Research and Literature at the Secondary Level Allyn Elaine Lawrence, Ph.D. Candidate Reading Department, University of Arizona	3
SQ3R: Several Queries Regarding Relevant Research Frank Spencer, Ph.D. Candidate Reading Department, University of Arizona	23
Section Two: Prereading Anticipation Activities, Paula Gaus, Ph.D. Candidate, Reading Department, University of Arizona	39
The Advance Organizer: A Review of Research at the Secondary Level Andrea Celine Sledge, Ph.D. Candidate, Reading Department, University of Arizona	41
The Structured Overview: A Prereading Strategy Anne L. Smith, Ph.D. Candidate Reading Department, University of Arizona	61
Call for Papers	81

SUBMISSION OF MANUSCRIPTS

This monograph series is planned and published as a non-profit enterprise by faculty and doctoral students in the Reading Department at the University of Arizona. Each article submitted is independently reviewed by at least three members of the editorial board. Issues for the current year have been designated to focus on reviews of research; however, subsequent issues are planned that will include specific research studies, theoretical papers that emphasize a need for research, and additional reviews of literature. Articles that deal with any of these areas are being actively solicited if they are (1) of interest to reading professionals on the secondary level, (2) are primarily directed to research, and (3) have not previously been published elsewhere.

One unique aspect of this series is that the editorial board is particularly interested in receiving papers from doctoral students and from assistant professors. It is our belief that many of the professionals in these categories do not publish their research findings because of a perceived and existing difficulty "breaking into the publishing game." We hope to encourage "first-time" authors by providing such an opportunity and encourage such prospective authors to submit papers or questions to the editors.

The response to our first effort has been most gratifying. As you may well appreciate, the production and dissemination of a new publication is hardly an easy task. In fact, as we succeed, the task becomes increasingly more complex. Our future success depends upon the degree to which our colleagues join us in generating research and in reporting their findings. It is to this end that this second monograph is dedicated.

J.L.V., Jr.
P.J.G.

PURCHASE OF MONOGRAPH

The first issue of this monograph series was published in April, 1978 and may be obtained for $2.50. Subsequent issues, including the current issue, are available at a cost of $3.50. Checks should be made payable to Research Monograph and forwarded to the University of Arizona, Tucson, Arizona 85721.

This monograph is the second in a series of semi-annual reports of research related to reading in secondary schools. This monograph has been funded by the Reading Department of the University of Arizona for the primary purpose of disseminating research findings to professionals in reading who are interested in improving the reading ability of adolescents.

SECTION ONE

Study Habits and Study Skills Related to Reading

A cursory review of pedagogical textbooks as well as reading research indicates that there is often no clear distinction between reading instruction and study skills instruction. For myriad reasons, these two topics have become intricately interwoven in the minds of many reading educators.

It is not our intent to take issue with this relationship, but instead to recognize its existance. Since reading educators, especially those who work with adolescents, do try to increase students' study skills and reading within a corresponding framework, it seems desirable to examine the research related to both the overall subject area and the one most frequently touted approach to study skills as applied in reading instruction.

To that end, Allyn Lawrence has examined pertinent research that relates to the overall perspective of study skills and study habits. Her original draft was far more extensive than we are able to present here since a review of such a broad area would, of necessity, conclude a considerable number of studies. The synthesis that she has provided suggests that, even in an area as broad as study skills, much of the current instruction is based more on supposition than on substantive research.

In that same vein, Frank Spencer's review of research related to Robinson's SQ3R is both enlightening and, to a degree, very discouraging.

Even though the various reviews of research that have previously been reported indicate that instruction is primarily based on faith rather than data, the extensive support for SQ3R in pedagogical texts, in light of the research on this activity, serves to epitomize the state of reading instruction for adolescents.

These two reviews have heightened our concern that research on reading in secondary schools is both primitive and barren. One not need ask, "Where to begin?" The obvious answer is, "Almost anywhere!"

Study Skills and Study Habits:
A Review of the Research and Literature
at the Secondary Level

Allyn Elaine Lawrence

Much of the research concerning study skills and study habits is inconclusive and contradictory. Numerous methods or techniques are presented to teachers which often rely solely on expert opinion or some theoretical principle of learning. Often, study skills are taught as reading skills and it is assumed that the student will acquire specific techniques (Herber, 1965, 1969; Marksheffel, 1966). It is generally agreed that a body of study skills exists; however, specific techniques that should be taught have not been clearly defined (Bamman, 1961; Marksheffel, 1966). The more important study skills include: locating information; reading graphic and tabular material; outlining, summarizing; notetaking; comprehending maps; setting purposes and rules for remembering; initiating inquiry; writing papers; critically evaluating information; and adjusting reading rate (Aukerman, 1972; Bamman, 1961; Cushenberry, 1972; Hafner, 1977; Harris, 1961; Marksheffel, 1966; Massey, 1965; Shepherd, 1973; Zintz, 1972; Zintz, 1975).

Although it has been argued that all reading skills from word recognition skills to various comprehension skills will be used at some

point, many efficient readers of literary material have not learned to deal successfully with informational materials, either because they have not learned effective study skills or effective study habits (Bamman, 1961; Shepherd, 1973). This suggests that a reading and study skills program should include all teachers of all subjects in order to raise students' academic ability (Massey, 1965; Thomas, 1972; Viox, 1968).

Purpose

The following is a review of the research and literature concerning the teaching of study skills and study habits at the secondary level. Much of the early research deals with how-to-study courses in combination with study habits. The emphasis in the majority of such courses focused on the characteristics of a good student; good and bad study habits; improvement of memory, attitude, and morale; problem-solving and reflective thinking skills; and specific study skills such as note-taking, lesson preparation, vocabulary, test taking skills, and research techniques. In addition, some studies dealt specifically with comparing superior with inferior students in terms of study skills or study habits. While these earlier studies have made important historical contributions, the conclusions must be considered in terms of the questionable statistical procedures employed in those historically earlier studies. Therefore, in light of new and more statistically reliable

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Proposals from teachers located all over the United States have begun to arrive at SNTE Conference headquarters in Las Vegas. In response to requests for positive suggestions, ideas, concerns, solutions and interesting innovations, dozens of workshops will be given by English teachers at the 1980 Conference. Also presented will be workshops given by authors, audio-visual specialists and by theatre teachers. Special interest workshops will be given by teachers who use music, art, dance, radio and video tape in their classrooms.

The Southern Nevada Teachers of English is currently involved in a very exciting educational event. SNTE will sponsor a Southwest Regional Conference in October, 1980, in Las Vegas, Nevada. The Conference will run October 16 through 19 and will host visitors from the invited states of Arizona, Colorado, New Mexico Hawaii, Utah, and Nevada. Special guests will be teachers from all over the United States. The Conference site will be the Las Vegas Hilton Hotel, a luxury vacation spot with extensive convention facilities. In addition to convention activities, the hotel will provide preferential seating for conference participants for shows in the Hilton Showroom. Join us!!

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The Southern Nevada Teachers of English is actively seeking textbook authors and writers of fiction and nonfiction to present ideas on composition, revision and the writing process. Several noted authors of adolescent literature have expressed interest in visiting the Las Vegas Conference to share ideas and to offer practical suggestions for writing and reading in the Languare Arts. All areas of English education, K through college will be covered in workshops and by guest speakers.

EXHIBIT JACKPOT

The Las Vegas Hilton Hotel offers an ideal place for exhibits. Spacious floor areas make browsing for books, materials, and audio-visual aides comfortable and fun. Major book publishers have already begun to reserve space in Las Vegas for 1980. The exhibit areas will remain open into the early evening to allow conference participants time to enjoy the morning and afternoon activities and workshops.

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findings, the emphasis in this review will be on more recent studies and only the general conclusions of the earlier studies will be included.

Early Research

In one of the earliest studies reported, Gatchel (1931) presented the results of a how-to-study course he conducted at a high school in California during the second semester of the school year 1929-1930. He had two groups. He conducted a how-to-study course for one group three times a week while a second group participated in group discussions or was given written work or study assignments to complete under the leadership of an advanced student.

Gatchel concluded that the overall changes favored his treatment group. He also concluded that the attitude of the "study group" was improved through observation of increased enthusiasm and alertness. His major conclusion was that the advanced students showed greatest improvement as more serious thought was injected into their papers and discussions and that the how-to-study group made superior improvement as a direct result of the course. However, an analysis of teacher's opinions of each student in both groups revealed that only 50% of the how-to-study group had improved in attitude and in quality of work as compared to 30% of the other group. Even the subjective conclusions that Gatchel reports are not clearly substantiated by the data he presents. Herein lies a recurring problem in these initial research efforts.

Wagner and Strabel (1935) conducted a series of studies to determine whether the results of a study skills course for high school juniors would produce varied effects depending upon the overall ability of the students. Their general conclusion was that superior students received greater benefit from such a course than did their less capable peers. Unfortunately, each of these "experiments" were severely hampered by a substantial mortality rate (does that suggest something about the instruction?) which leads one to believe that these endeavors, collectively, were inconclusive. As with Gatchel's research, the results must be considered in light of the questionable statistical techniques. In addition to the high mortality rate, sample sizes were small and inadequate sampling and instrumentation procedures were employed.

Cuff (1957) also looked at students' study habits and their relation to success in school. His main concern was the lack of scientific support for rules of study especially for the grades four through twelve. Cuff tried to determine what the good and bad study habits were and how students from inferior to superior achievement levels learned and differed in quality and type of study habits employed. Cuff made ten partially interpretive conclusions based solely on a questionnaire and a survey of the literature (which he never cites!). He concluded that:

> "Study habits are formed early as a result of trial and error or of other subtle, selective, and fixative factors and that thereafter the vectors tend to remain constant

> unless effective remedial programs planned by alert teachers result in changes. The comparisons of high and low achievement groups also reveal that in every grade the superior pupils have better study habits than the failing pupils" (pp. 299-300).

DiMichael (1943a) emphasizes that the learning of certain study skills should not be left to chance or to trial and error and that formal methods of teaching effective study skills are necessary in order to help form effective study methods. The purpose of his investigation was to determine the effectiveness of a how-to-study course in helping ninth-grade pupils gain greater knowledge and deeper understanding of good study techniques. He found that students in the how-to-study course scored higher on a "Knowledge of Study Skills Test" which he developed than did their counterparts in the control group regardless of their intelligence. Specifically, he concluded that these students with superior IQ had learned effective study skills and that those skills were more refined if such students received instruction. Correspondingly, those students of average intelligence did seem to possess study skills only if they had been taught directly to them. He suggested, therefore, that students of average intelligence were most in need of study skills training.

In a follow-up study, DiMichael (1943b) attempted to measure and compare the transfer effects (the extension and application of what was learned in a how-to-study course to other subjects) upon the achievement of ninth grade students of different levels of intelligence with special

emphasis upon achievement in history, Latin, and algebra. He concluded that the course was valuable for students of average mental ability. On the other hand, students of lower mental ability did not profit noticeably nor was the course beneficial to students of higher mental abilities. In addition, the transfer effects should be judged with reference to a particular subject and not with reference to total average grades of the student in all subjects together. He believed that superior students did make significant gains in the knowledge of study skills, but this knowledge did not transfer to other subjects to any great degree with the exception of history.

Recent Studies

The broad spectrum of study skills and study habits is also the major focus in many of the more recent studies rather than isolated skills or habits. These studies will be cited in more detail due to the more sophisticated statistical techniques and relative importance to education today. In addition, two studies will be cited that deal specifically with the study skill of notetaking.

Three of the recent studies were concerned with study habits in relation to study skills. In 1972 Harris and Ream conducted a study which attempted to teach high school students ways to increase their commitment to improving their study habits and specific techniques for doing so. Subjects were both volunteer and non-volunteer (teacher

requested classes to participate) for a summer school session. Both were to report daily study habits which would serve as criteria for success of the program in addition to summer school grades.

The results of this study are inconclusive. Of the 150 volunteers only one received the 10 planned lessons. In addition, a large number of students for both groups did not turn in the self-report data concerning study time and study methods used. Therefore, only the summer school grades could be used as an indirect measure of improved study habits. The researchers concluded that "the many problems encountered while the study was being conducted [e.g. inconsistent data collection, lack of self-report, and attendance] made it impossible to gather information pertinent to the issue of whether such a self-control program would improve the study habits of motivated students" (Harris and Ream, 1972, p. 328). It seems that the students were not very motivated as evidenced by the many who failed to continue and participate fully if they did remain in the course. The study was set up to reduce apathy and increase commitment, but students dropped out. Therefore, it cannot be concluded that the course had any effect. The researchers feel certain, however, that such a program should not be abandoned either because it clearly cannot work or because student apathy is so great that there is no point in providing such opportunities. (Editor's note: As this problem existed in 1935 (Wagner and Strabel) and still remains in 1972, it seems that the instruction and/or content of such courses warrants serious

review.) In addition, the researchers concluded that such a program might need to be on an institutional basis rather than individual. Further, "... if social rewards could be made contingent upon academic performance as well as athletic performance, commitment to improved study habits probably would increase dramatically" (p. 329). Unfortunately, the researchers never suggest any techniques for implementing such a program.

Harris conducted a second similar experiment with Trujillo (1975) in which the purpose "... was to see whether or not junior high school students could be taught principles of behavior modification and use them to change their own behaviors. The behaviors chosen for change in the present experiment were study habits, as measured by grades and self-reports" (Harris and Trujillo, 1975, p. 513). This was a three group study. There were two experimental groups - one of which was a self management group, the second learned the subject matter in a group study discussion; the third was a control group receiving no instruction.

The same instructor worked with both those students in the self-management group as well as those exposed to group discussion. The study was conducted over a twelve week period. Both groups were given a pretest and a posttest questionnaire and were asked to fill out study-habits data sheets the first and last weeks of the program. The group discussion students, however, did not fill out study records each week nor were they given any specific lesson or device for improving study

habits as were the self-management group. The self-management group received specific lessons consisting of specific study skills such as notetaking applications to specific subject matter, examination skills, maintenance of good study habits, and the various components of Robinson's SQ3R method. (Editor's note: See Spencer's review of SQ3R in this issue.)

"The results of this study suggest strongly that self-management techniques can, indeed, be taught to junior high school students who are reading below grade level and whose IQ test scores are below average" (Harris and Trujillo, 1975, p. 516). Both treatment groups showed an increase in grades at the end of the experiment as compared to the control group. However, there was not a significant difference between the two respective groups as calculated by an analysis of covariance of the grade point averages from grades over the six weeks period in comparison with preceeding semester grades.

Grades had to be used as a measure because again the students failed to keep accurate study records even though they were given candy and cokes for returning the data sheets. In addition, some records were inaccurate due to the desire to obtain the reward only and students were known to make up answers. As a result, these records were not analyzed. This outcome seems contradictory to the advocation of self-management techniques. It is impossible to suggest that self-management techniques would be successful and could be taught when

even with rewards available, the students did not respond or they cheated.

Two recent studies have examined specific study skills. Palmatier (1971) chose to look at notetaking techniques because only five experimental efforts relating to notetaking had been reported since the turn of the century. An examination of the five studies that he cited revealed that at least two were conducted at the college level, and one of those was his own.

In view of the lack of research, Palmatier attempted to compare four notetaking procedures in terms of relative effectiveness and efficiency. "The intent of the study was to examine the relationships among the four methods with respect to 1) ease of learning; 2) efficacy in recording the essential content of lectures; 3) utility for studying lecture material as measured by delayed multiple-choice tests (allowing time for study of notes)" (p. 235). In order to do this he sampled 135 students from an eleventh grade population of a suburban Central New York State parochial high school. The experimental activities were conducted with these students in eight English classes in which two classes were trained in each of the four notetaking procedures. Each group was also equated in terms of intelligence level. The four notetaking methods examined were: a) the traditional Formal Outline Procedure (FOP); b) a three-column method (PCU); c) a two-column method known as the Bartush Active Method (BAM); and 3) a No-Special-Method

control (NMC) allowing the students to take notes as they wished. None of these methods were described in detail, but they were referenced.

Training and testing in notetaking procedures were completed in seven class periods. The training included four sessions of instruction and practice and an evaluation of notetaking skill after the first two days of training. Students were instructed in the general format or organization and how to increase quality of notes. The students were allowed extended practice "....in taking notes from taped lectures. After the training sequence, final evaluations were sought on 'quality-of-notes' and recall" (p. 237). The "quality" of the students' notes was evaluated according to their performance on a Taped Note-Taking Test devised by the author in which the students listen to a ten minute tape-recorded lecture and then answer 30 comprehension questions over the material. "Quality-of-notes" was then "...determined by a score derived from comparing the content of student notes with the lecture outline and adding the factor of number of words used. The scoring procedure resulted in three ratios representing completeness, clarity, and conciseness which were totaled to provide the 'quality-of-notes' score" (p. 237). In addition, the mean group performances of the final "quality-of-notes" measure were compared in order to examine the ease of learning to use each procedure.

Palmatier states that an examination of the changes in "quality-of-notes" for each of the students revealed that only the BAM group

actually improved (but not significantly) above its pre-training level. The other three groups showed no change or a negative tendency. An ANOVA revealed that no significant differences were measured in the change in the "quality-of-notes" among the four treatment groups.

In view of the results, Palmatier is unable to come to any significant conclusions concerning the comparative value of the four notetaking procedures. He did conclude that the insignificant changes were due to an insufficient amount of time to achieve meaningful levels of competence excluding other variables that could have intervened.

Kulhavy, Dyer, and Silver (1975) also conducted an experiment which dealt with notetaking activities. They sought to compare student performance on both multiple-choice and constructed response tests over a narrative passage on which the students either took notes or underlined critical information. A control group simply read the passage. In addition, they wanted to find out if study strategies were influenced by the type of test the student expected. It was predicted that notetaking would increase comprehension and that knowledge of the type of test would increase performance on that type of test but not on an alternate test.

"Two factors, Study Behaviors (B) and Test Instructions (I) were combined factorially to form nine experimental groups. Test Mode (TM) was varied as a within-subjects factor across each cell. The final design was a 3 B (Notetaking x Underlining x Read-only) by 3 I (Multiple-

choice x Constructed Response x No Instructions) by 2 TM (Multiple-choice x Constructed Response test) mixed analysis of variance with repeated measures on the TM factor" (p. 363). One hundred and forty-four students from junior and senior high school classes at Gilbert, Arizona, were assigned randomly, 16 per factorial cell.

The students were given an 845-word narrative passage to read which was constructed by the authors and tested for readability with a pilot sample of high school subjects. A pre- and posttest was also given. The results of the study are interesting as they...

> ...support the notion that note-taking leads to an increase in what the learner can remember from reading a text. The superiority of the notetakers to those who underlined also suggests that the taking of notes involves more than the mere identification of text units. However, the overall advantage of the note-taking groups is paralleled by a significant increase in the amount of study time taken... The data did not bear out predictions regarding Instructions and Test Mode (p. 364).

These findings have several classroom applications. First, the student may increase content memory by being instructed to take notes over specific texts. Secondly, students might be informed that by underlining material as opposed to mere reading they may increase their comprehension. And thirdly, the knowledge of the type of test seems to have minimal influence on recall.

Other Reviews of Literature

In view of the research cited, it is evident that much has yet to be determined conclusively about study skills instruction. Berg and Rentel

(1966) surveyed journal articles regarding the improvement of study skills published over the last 10 years and found that "in many instances they were preachments based apparently on opinion rather than on research" (p. 343). Based on their review of the research (both college and secondary), they concluded that there is a lack of agreement as to what study techniques to teach and "...that both failing and successful students use about the same study skills. In fact, many excellent students do not seem to use the study skills which educational specialists recommend as efficient" (p. 344). One highly questionable conclusion they emphasize is that "what seems to be certain in the midst of conflicting data was the fact that instruction and practice in study skills did produce significantly higher skill levels than were obtained through trial and error methods" (p. 344). This conclusion is based on Robinson's (1961) report of "Study Skills for Superior Students in Secondary School" in which Robinson draws many of his conclusions from research conducted only with college level students. This seems to be a major fallacy with much of the literature and research related to study skills. Because there is a lack of research on the secondary level, many of the writers perhaps too confidently support their findings and conclusions for secondary students with findings for university students by simply assuming similarities do exist.

One such example is the Harris and Ream (1972) study in which they state that "by the time students reach the college or graduate

level, those with extremely inadequate study behaviors probably have been weeded out; nevertheless, the great majority of the research on means to improve studying has been done with students at this level" (p. 325). After stating such a fact, the authors ironically and confidently support their own conclusions with those of college level research. It should also be noted that it cannot be assumed that "inadequate" study behaviors have been weeded out at all college levels.

Robinson (1961) finds no fault in citing research conducted at a college level to support his opinions because he is trying to emphasize giving instruction in higher level reading skills to superior high school students who may be enrolled in collegiate courses or who may plan to enter college and want to learn these skills. He does not state specifically any statistical data to support the idea that these high school students can be compared to college level students. He, too, simply assumes that a transfer of these skills will occur.

Entwisle (1960) did an extensive evaluation of study-skills courses which further emphasizes the lack of research done at the secondary level. She begins by stating that "there has been an increased tendency in the past ten years for colleges and universities to offer courses in study techniques" (p. 243). However, it is evident from the small research sample presented here that concern for teaching study techniques dates back more than ten years.

In view of the research, it is also evident that no agreement exists as to what specific techniques should be included in a study-skills course because there is a dearth of clear-cut research findings. Entwisle feels that "previous work ... indicates that courses are probably beneficial, that study methods contribute to achievement, but can offer little help on which methods are optimal" (p. 243). She, therefore, attempts to evaluate 22 study skills courses in order to see how effective they really are. It is interesting to note that out of the 22 courses evaluated, only three were on the secondary level. In most of the evaluations, the experimental group was matched with a control group on the basis of intelligence or scholastic aptitude which could be controlled and a second variable of motivation that was not commonly controlled. The additional variables used included grade level and the specific criterion used (such as reading scores, GPA, skill tests). Entwisle concluded that: (1) a study-skills course will usually be followed by improvement; (2) a course will be most beneficial for students desiring to take it; (3) students wishing to take a study-skills course, but prevented from doing so, and, therefore, presumably of comparable motivation to those enrolled, fail to show significant improvement; and (4) any gains noted will not necessarily be realted to either the content or the duration of the course (p. 250).

Many of Entwisle's conclusions and findings generally concur with the findings of the research cited. Her review is well worth noting and an up-dated follow-up examination would be beneficial.

Conclusion

Much of the early research emphasizes programs to improve study habits and either inadvertently or intentionally study-skills have been included. A list of specific skills which should be included is not yet agreed upon. Generally, the content of most courses includes: characteristics of good students; environment and materials; attitudes; habits; methods of review; test preparation; notetaking; good and bad study activities; and sometimes, specific behaviors.

Most of the research is based on the notion that by improving study habits, academic effectiveness will be increased as a direct result of the study skills courses. However, there is no common agreement as to how and what should be taught in such a course. It is generally agreed that the learning of study skills should not be left to chance and that students of superior intelligence know more about efficient study techniques than students of lower intelligence.

It seems that the more recent research cited deals specifically with notetaking or other specific methods as opposed to a broad spectrum of habits and/or skills. For example, Robinson's SQ3R method was suggested several times as a study method that should be employed by students.

Much more research does need to be conducted concerning specific skills and their worth for students in the secondary schools. In addition, the duration of the studies should be increased. Much of the

current research was inconclusive or questionable due to the short duration of the study and the sample selection. Surprisingly little research has been done on the secondary level and instruction for adolescents largely depends upon research conducted at the college level for support.

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SQ3R: Several Queries Regarding Relevant Research

Frank Spencer

Educational research is rife with investigations concerning study habits, study skills and study conditions employed by students of varying abilities and achievement across almost all grade levels. Historically, it has been generally agreed that many, if not most, students on the secondary and college levels have very poorly developed study skills (Ahmann and Glock, 1957; Blake, 1956; Brown, 1940; Brown, Abeles and Iscoe, 1954; Chahbazi, 1958; Robinson, 1961, 1961a).

Various study methods have been investigated (Arnold, 1942; Check and Rucinski, 1967; DeLong, 1948, Mathews, 1938; Stordahl and Christenson, 1956). Whatever the method employed, instruction and practice are necessary in addition to a mere explanation of the method (Stordahl and Christenson, 1956).

Formulation of SQ3R

In 1941 Francis P. Robinson described a method of studying:

> The best way for the student to take ... notes is to read a section of his assignment, or listen to a portion of a lecture, which develops a main point and then, without looking at the book, jot down the main point in his own words. He then reads the next section, takes notes, etc. This system takes a minimum of time and is useful in

> developing effective reading skills. In order to obtain notes that are easily perceived, the student may wish to use terse, journalistic headlines rather than long, complete sentences.

He cited only one study (Borass, 1938) to show that some form of a "working outline" is quite effective for taking notes. Three additional reading sources were mentioned at the end of the section (Bessey and Coffin, 1934; Bird, 1931; Frederick, 1938). In the third edition of this work, called Effective Study, Robinson (1961) cited research to support the following techniques: a quick preview of the material, having questions before reading, outlining and related techniques, and recitation. He then integrated these techniques and introduced a study method he called SQ3R (Survey, Question, Read, Recite, Review). Robinson stated that "evidence of the success of this method has been obtained from several studies" (p. 30). However, he cited no specific references. He did briefly describe some type of experiment as follows:

> In one experiment several sections of a how-to-study class measured their reading ability (reading rate and comprehension accuracy) on a test which dealt with the history of Canada; they were given practice in the use of the Survey Q3R Method for several days, after which they took another comparable reading test. Before training, the average rate of reading for the classes was at the 34th percentile and after training it was at the 56th percentile; before training the average accuracy of comprehension was at the 43rd percentile; after training it was at the 53rd percentile (p. 30).

This is probably the evidence he refers to, since in the first edition there is an exercise in taking "working notes" on "The Stirring Story of Canada's Past." Even if Robinson himself conducted the "several studies" that show the effectiveness of SQ3R, no evidence exists that they were truly experimental. His final attempt at a proof of effectiveness was his statement that "one of the most convincing arguments for the method has been the comments of the students who have tried it and found that it worked" (p. 30).

In the 3rd (1961) and 4th editions (1970) of Effective Study, Robinson repeated verbatim his research base for the use of the SQ3R method. He showed that the parts of the method were based on research findings, but he did not once cite a source that showed SQ3R as a whole to be more effective than other methods of study. In the 4th edition he did cite two studies that dealt with SQ3R (Willmore, 1967; Wooster, 1958). These studies were concerned with methods of instruction of the SQ3R method. At the time SQ3R was formulated, each step in the process had been investigated separately, but research on the method as a whole appears to have been informal at best.

SQ3R in the Literature

The SQ3R method of study has been widely cited in textbooks on reading improvement, the teaching of reading, and study skills. Of the thirty-two sources investigated, the majority simply stated that the

SQ3R system is a good method to use for studying. In several sources the notion was advanced that the SQ3R method is based on extensive research (Kalish, 1969; Kravitz, 1972; Morgan and Deese, 1957; Peters, Burnett, and Farwell, 1963; Smith, 1961; Spache, 1963, Thomas and Robinson, 1972). Only Harris (1970) points out that this method "seems to be well grounded in the experimental psychology of learning, but has not been subjected to much experimentation" (p. 440). Unfortunately, this review must lead one to concur wholeheartedly with Harris' observation.

Derivatives of SQ3R

There have been a number of variations of the SQ3R method introduced in the literature. The authors generally mention SQ3R, give Robinson his due credit, then explain why they have modified the original method. Among these derivatives are PQ4R - Preview, Question, Read, Reflect, Recite, Review (Thomas and Robinson, 1972); PQRST - Preview, Question, Read, Summarize, Test (Spache and Berg, 1966); OK5R - Overview, Key Ideas, Read, Record, Recite, Review, Reflect (Pauk, 1974); OARWET - Overview, Ask, Read, Write, Evaluate, Test (Norman, 1968); PANORAMA - Purpose, Adaptability, Need to Question, Overview, Read, Annotate, Memorize, Assess (Edwards, 1973); EVOKER - Explore, Vocabulary, Oral Reading, Key Ideas, Evaluation, Recapitulation (Pauk, 1963), especially for reading imaginative prose, poetry

and drama; SQRQCQ - Survey, Question, Read, Question, Compute, Question (Fay, 1965), especially for use in reading mathematics problems.

These off-shoots of the original SQ3R method have not been justified on their own merits; rather they assume a place under the umbrella of respectability that duration has provided for SQ3R. Yarington (1977), with tongue in cheek, voices a mild protest when he suggests SQPRST - Studying, Questioning, Plodding, Reviewing, Sighing, and Taking notes.

Research

Five studies have been identified that deal with the effectiveness of SQ3R as a method of study. Of these, two were unpublished, and two were reviews of the literature.

In 1967 Sister Mary Donald reported a study entitled "The SQ3R Method in Grade Seven." The study was limited to two equivalent groups of thirty-one seventh grade pupils of a southern Minnesota parochial school. The students were matched on the bases of mental age and IQ as well as reading, geography and history scores obtained from the Coordinated Scales of Attainment, an achievement battery test.

During the year the SQ3R method was used in teaching social studies to the experimental group. The control group was taught in the traditional manner of teaching assignments and pupil study, i.e., group work, oral and written reports, and reading and answering questions.

The experimental group followed Robinson's description of the SQ3R method, except that, for variety, working notes were sometimes taken as outlines, summaries, informal answers or main idea statements.

Different motivation techniques were used with the different groups. The experimental group made posters to demonstrate understanding of concepts; articles concerning SQ3R were read to the students; notebooks were kept; and questionnaires on the value of and attitude toward the SQ3R method were periodically gathered. The control group's motivation was reported as desire to achieve high grades, to increase knowledge, and to complete the curriculum.

Certain variables were controlled. The same amount of time was spent for teaching and study for each group; the same materials, curriculum, and reference books were used by both groups. It was reported that as far as possible, teacher efficiency and enthusiasm were equalized, although how this was accomplished is not mentioned.

At the end of each semester, teacher-made tests were given in geography and history. The tests had previously been validated for difficulty and discrimination on a sample of 116 seventh graders not in the experiment. At the end of the year, an alternate form of the Coordinated Scales of Attainment was given. Initial scores of control and experimental groups were compared with the final scores of both groups. A *t*-test was carried out to determine significance of differences. On standardized tests, the gain of both groups was not

significantly different. On teacher-constructed tests there was a statistically significant difference (.01 level) between the means of the two groups, in favor of the experimental group. These tests relied more heavily on judgment and critical evaluation. The assumption is that the standardized tests may not have measured all, if any, of what was taught.

The conclusions drawn from this study are that these junior high school students benefited from instruction in the SQ3R study method; that these students developed better powers of organization, association and critical thinking; that general reading ability did not significantly improve; and that teachers observed that instruction in the SQ3R method provided a sense of security in independent attack for students when confronting content material.

Criticisms of Sister Donald's study might include matched pairs with a small population; modification of the SQ3R technique, and apparently lopsided motivation control. Two good points of the study were the attempt to control variables of time, materials and teacher efficiency and enthusiasm, and the validation of teacher-made tests before use in the study. Further appropriate data could have been derived had Sister Donald pretested with a teacher-constructed test. This would have provided a more revealing measurement of difference when such instruments were used for posttesting.

In the 1970 edition of Effective Study, Robinson cites Doloris Willmore's dissertation, "A Comparison of Four Methods of Studying a College Textbook" (Willmore, 1967). The four methods she compared were: reading, underlining, outlining, and SQ3R. Subjects were eighty study-skills students at the University of Minnesota who were assigned to four experimental groups, then taught each of the study methods by one person. Order of presentation was rotated: that is, each student used all four methods, but in varying order.

Students were tested immediately after each two-hour class. Two weeks later they were given a five minute review period and tested again. Before being given test results, students were asked to rate each method on a scale and to indicate if they would use any of the methods on their own.

Statistical difference existed for time needed to complete the methods. Reading took less time than the other three. Underlining took less time than outlining or SQ3R. When adjustments were made for time, there was significant difference in mean achievement on the tests for the methods. Underlining scores were higher than reading scores, outlining scores or SQ3R scores; SQ3R scores were higher than outlining scores. Students reported that reading and underlining had been used most often in the past and would be used most often in the future as well. In general, underlining received the most favorable ranking as a study method.

In Willmore's design, the rotation of presentation avoided a set pattern. The fact that each student used every method once meant that inter-subject error was eliminated, that is, each student served as his own control. She noted the time difference and controlled for it. Criticisms include her using too few subjects and her failure to report the characteristics of the population.

Wooster's "Teaching the SQ3R Method of Study: An Investigation of the Instructional Approach" (1958) is also cited by Robinson in 1970 to show that "...certain typical errors may occur, usually because old study methods interfere" (p. 34). Wooster wanted to find out why a study skills course, using the SQ3R method, was not producing expected amounts of gain in study skills. He kept records on twenty-nine students in the course, with information on (1) reading rate, (2) comprehension test scores, and (3) evaluation ratings given on notes taken. These results were tabulated, and curves fitted to the data. Student commentaries were also considered.

Reading rate did not improve significantly. It dropped at first, then recovered. Comprehension remained steady. Quality of notes showed highly significant gain. Most of the group did the survey step, but probably not advantageously. About two thirds of the group still formulated questions. Students continued to take notes while reading, instead of after. Review was done in a perfunctory manner, if at all. Wooster concluded (1) that the SQ3R method should be presented briefly,

then attention should be turned to the component parts; (2) that students are not prepared to learn integrated techniques like SQ3R; and (3) that the SQ3R method can be helpful and should be taught, but the instructional approach should concentrate on the component skills of the method.

Wooster's study is more descriptive than experimental. He seems to have accepted the validity of the SQ3R method at face value and looks to place the blame for its lack of expected success on the instructional method. It is curious that Robinson notes the factor of students' characteristics ("old study habits interfere") which Wooster does not mention. Wooster emphasizes instruction in and practice with the parts of the method before using the method as a whole. Robinson in 1970 says, "This completes a review of the steps in the SQ3R method. Now attention must be given to practicing the SQ3R method as a whole" (p. 39).

David Wark (1964) surveyed the research that Robinson originally cited in support of the survey, question and recite steps of SQ3R. He found that the "survey" step was based on an experiment conducted in a psychology laboratory in which a short non-technical passage was skimmed for 25 seconds before being read by the experimental group. There was no difference in comprehension scores although the experimental group read slightly faster. Research on question-formulation indicated that pre-questioning would help only in retaining information indicated by the questions. "New" information (not covered by the questions) is less likely

to be retained. The working notes used in "recitation" have not been shown to be any more effective than simple re-reading. In general, Wark concluded that there is no evidence to support SQ3R as a productive study method.

Crewe and Hultgren (1968) have also conducted a review of the literature concerning study skills and reported that they could find no data to support the SQ3R method of study. They concluded that SQ3R "... does not warrant the emphasis it now receives" (p. 77).

Summary

The steps of Robinson's SQ3R method of study appear to have been studied separately. Robinson apparently tried out his method and thought the results were very good. The method as a whole was not formally tested by Robinson, and, as far as this author can determine, neither has it been tested by anyone else.

Mention of SQ3R became so widespread that authors assumed its validity and developed their own variations. Few have noted the need for research of this method.

Some attempts have been made to measure the results of using the SQ3R method. One study found SQ3R to be a good method; one found underlining to be a better method than SQ3R; and one was concerned with how to teach SQ3R. Two studies were reviews of the literature that discovered no research basis for the SQ3R method.

The SQ3R method may well structure students' approach to studying an assignment so that repetitive use would facilitate acquisition of information from the text. In order for this method to be legitimately advocated, however, it appears obvious that a research effort must be made to substantiate the claims of the proponents of the SQ3R method and its derivatives. Results of this research may also shed additional light on past studies which have assumed SQ3R to be a pedagogically sound method or which has utilized SQ3R as a variable in the research.

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SECTION TWO

Prereading Anticipation Activities

The readers' need to bring their background of information and experiences to the reading task is becoming more and more obvious to researchers in the interdisciplinary fields of cognitive processing. How a reader might be encouraged to bring his background to bear on the passage at hand has been investigated for some time, before 'schema theory,' 'propositional analysis,' and 'inference generation' gave prereading activities a stronger, broader theoretical base.

In this section, the research on two of the widely advocated prereading strategies intended for adolescent readers are discussed. Although advance organizers and structured overviews would seem to be theoretically consistent with current theories of the reading process, it also appears that research does not completely support their use with junior and senior high school students.

Andrea Sledge delved into the extensive literature which surrounds the advance organizer, limiting herself to that which specifically addressed its use with adolescents. She concluded that the research on AO's, as they are affectionately known to their advocates, does not permit unqualified conclusions. These results, the author feels, may be due to flawed research designs and inadequate controls. Further, she postulates that the utility of the AO may be subject and content specific.

Anne Smith, investigating structured overviews when used in pre-reading situations, outlines the characteristics of such overviews and the research underlying them. Use of the structured overview appears to be based upon research which has shown ambiguous results. The author offers a concise description of the current status of research on structured overviews and a direction for further research.

These two reviews of literature point the researcher in yet another potentially fruitful direction for research. Though A.O.'s have been extensively investigated and structured overviews have been laregly ignored, the findings have not yet given educators a clear view of the utility of either type of prereading anticipation device.

The Advance Organizer:

A Review of Research at the Secondary Level

Andrea Celine Sledge

> "The learning and retention of unfamiliar but meaningful verbal material can be facilitated by the advance introduction of relevant subsuming concepts (organizers)." (Ausubel, 1960, p. 267)

Thus was launched more than a decade and a half of inquiry into the nature and function of the advance organizer. Ausubel (1960), Ausubel and Fitzgerald (1961, 1962), Ausubel and Youssef (1963) and Fitzgerald and Ausubel (1963) conducted the seminal research in the early 1960's, using, primarily, students on the college level.

This localized spring of studies has broadened into a river of investigation, flowing from the elementary through the secondary to the college and adult levels; within the past six years several analyses have been made to assess the quality of these waters (Novak et al, 1971; Blanton, 1872; Cunningham, 1972; Barnes and Clawson, 1975; Faw and Wallker, 1976; Hartley and Davies, 1976; Lesh, 1976; Lawton and Wanska, 1977).

Along with a vigorous empirical interest, pedagogical advocacy of the advance organizer has developed, as well, particularly for the content area classroom at the secondary level.

Estes and Vaughan (1978) list three criteria for its use:

a. the material is slightly familiar to the student.

b. the organizer is both more general than and clearly related to the material.

c. the student perceives "the logical hierarchical relationship" (pp. 142-143).

Hafner's (1977) advocacy is most emphatic: "... we can understand better and retain more if we relate ideas to a cognitive framework or hierarchy. If such a framework is lacking or is in need of reactivation or refurbishing, then the advance organizer should be developed in order to provide it" (p. 34). Pearson and Johnson (1978) state without qualification, "... we strongly believe in the concept of advance organizers" (p. 13).

Background

Theoretical Base

The concept of the advance organizer as a tool of instruction is derived from Ausubel's subsumption theory of meaningful verbal learning (Ausubel, 1962, 1963). The learner's cognitive structure is the "stability, clarity, and organization of ... subject-matter knowledge in a given discipline" (Ausubel, 1963, p. 76). Its organization is rooted in the principle of progressive differentiation, i.e. a hierarchy of increasingly more inclusive concepts, linked by a process of subsumption.

New information can be subsumed (related to stable elements) in the cognitive structure, if it is meaningful. Hence the rationale for the advance organizer:

> One important variable affecting the incorporability and longevity of new meaningful material is the availability in cognitive structure of relevant subsuming concepts at an appropriately proximate level of inclusiveness to provide optimal anchorage. If appropriately relevant and proximate subsumers are not present, the learner tends to utilize the most relevant and proximate ones that are available. But since the latter subsumers do not provide optimal anchorage, and since it is highly unlikely that the most relevant and proximate concepts are typically available to learners in most learning situations, it would seem desirable to introduce the appropriate subsumers, and make them part of cognitive structure prior to the actual presentation of the learning task. The introduced subsumers would thus constitute efficient advance "organizers" or anchoring foci for the reception of new material (Ausubel, 1962, p. 219).

Advance organizers function to:

a. activate subsuming concepts which the learner possesses already,

b. provide optimal ideational anchorage at an optimal level of inclusiveness, for unfamiliar material,

c. "increase the discriminability of the learning passage from analogous and often conflicting ideas in the learner's cognitive structure" (Ausubel, 1961, p. 266)

for material that is a variation of known concepts.

Specifically, an advance organizer (most often a prose passage) is presented to the learner, prior to the material to be learned. Its content is relevant to, but "at a higher level of abstraction, generality, and inclusiveness than the topic to be learned" (Ausubel, 1963, p. 81). Further, "it is relatable to presumed ideational content in the learner's current cognitive structure" (Ausubel, 1978, p. 253). For example, a social studies unit concerned with the Great Depression might be preceded by an advance organizer on economic cycles.

Ausubel's Research: A Summary

In 1960, Ausubel investigated the usefulness of an expository advance organizer (AO) in learning unfamiliar scientific material. Experimental and control groups read an AO or a historical passage, respectively, and then the material to be learned. A posttest was administered three days later. After matching forty of the 120 college seniors on sex, academic major, and prior knowledge of the topic, the experimental group was found to have scored significantly better than the control group (probability between .01 and .05).

Ausubel and Fitzgerald (1961) studied the effects of a comparative AO. They hypothesized that (1) to the extent that an AO was discriminable from related concepts, it would facilitate retention of the material to be learned, and (2) subjects with unclear and unstable concepts of related material would derive more benefit from an AO.

The 155 college seniors took a pretest on Christianity (test of related concepts). Two experimental groups and one control read an expository AO, a comparative AO and a historical introduction, respectively. A passage about Buddhism was read two days later. Equivalent forms of a posttest were administered at three and ten day intervals. The comparative AO group scored significantly better than the other groups on the three day posttest. Both AO groups scored significantly better than the control group on the ten day posttest. Those subjects with scores below the median on the pretest accounted for most of the differences in the posttests. Both hypotheses were confirmed.

In a subsequent study, Ausubel and Fitzgerald (1962) examined the facilitative effect of an AO and general background knowledge on learning new material, and the effect of prior learning on subsequent learning. They also hypothesized that an expository AO would be of benefit to students with less verbal ability (as measured by the School and College Ability Test). Over a period of twelve days, 143 college seniors took a test on endocrinology (general background assessment) and read an expository AO (experimental) or a historical introduction (control). The subjects then read a passage on endocrinology, took a posttest, read another sequentially related passage on the same topic, and took a second posttest. The AO facilitated learning of the first passage ($p < .07$, in favor of the experimental group), but not of the second

(no significant differences between the experimental and control groups). Those with lower verbal ability (lower one-third of the verbal ability range) accounted for the near significant differences (approaching $p < .05$) on the posttest of the first passage; differences were negligible for the upper two-thirds of this range. Scores on the first posttest were significantly related to those on the second; i.e. prior learning facilitated subsequent learning.

Research Studies at the Secondary Level

Purpose and Scope

The purpose of this review is twofold: (1) to assess some of the research that has been conducted at the secondary level concerning the efficacy of an advance organizer in meaningful verbal learning; and (2) to determine if any unifying threads or salient dichotomies can be discerned, upon which conclusions about current pedagogy and future research may be based.

Although research centered on the advance organizer has dealt with subjects participating in the full range of formal education, the parameters of interest here are the seventh through the twelfth grades. The proportions of positive, mixed and null findings in the twenty-two studies reviewed are not too much at variance with other reviews, which have considered a wider range of subjects (Barnes and Clawson, 1975).

In terms of organization, studies representative of each of three types of outcomes (positive, mixed and null) will be discussed in depth, while others with like findings will merely be referenced. Discussion of other observations on the research will follow, including:

a. type of treatment,

b. type of advance organizer,

c. content area, and

d. ability and grade level.

Positive Findings (Triezenberg, 1968; Kahle and Rastovac, 1976; West and Fensham, 1976; Jones, 1977)

Could AOs facilitate the learning of the same concepts by subjects with wide variations in ability? This was the question of interest for Jones (1977). His subjects were secondary students in a metropolitan area. Based on I.Q., academic record and Iowa Test of Basic Skills scores, they had been assigned to one of five basic and two college preparatory science courses. Within the basic and college preparatory classes, students were randomly assigned to either an AO group or an advance nonorganizer group (general references to the topic without an express organization of the relevant or essential elements into a conceptual framework). The AOs were geared to the levels of sophistication of the two course levels. The experimental and control groups met in separate rooms to read the organizers, having been told that they

were breaking into small groups, and then reassembled. They viewed a tape-slide presentation of the scientific concept of feed-back, and had further discussion. A posttest was administered four days later and three weeks later, (split half reliability of .73 for the college preparatory and .71 for the basic). On the performance test, the AO groups scored significantly higher than the advance nonorganizer groups (.01 college-prep and .05 basic). On the retention test, the college-prep AO group score was significantly higher than the control group (.05). (The AO and the posttest had been given to another control group to verify that the AO alone did not affect performance.) The lack of significant differences on retention for the basic group may have been due to the control group learning from the experimental group in the interim. Jones concluded that AOs designed for ability levels and backgrounds facilitated learning. His conclusions appear to be valid, based on his findings, and merit further study.

In three related studies, West and Fensham (1976) compared prior knowledge, AOs, and remedial teaching, as prior conditions to the learning of the principles of comprehension and application of principles. Experimental groups, comprised of Australian eleventh and twelfth graders, read an AO of expository and comparative character, a set of questions designed to encourage careful reading, and the material to be learned. This latter group had brief expository AOs prior to each subsection. The control groups read an introductory passage that neither described

the new concepts nor related old to new learning; motivation questions, as with the experimental groups, followed. The text did not have interspersed AOs or alternatives.

West and Fensham concluded that (1) prior knowledge may function as a subsumer; (2) learning is facilitated by the use of AOs, for subjects without prior knowledge of the topic; and (3) remedial teaching interferes with the facilitative effect of AOs. Because of the inclusion of pre-reading questions and AOs within the text, one must question whether the results favoring use of AOs were due to subsumption or to repeated review of the concepts.

Triezenberg's (1968) comparison of verbal, sketch, and model AOs to teach ecological concepts yielded positive results in favor of the last type of AO. The study's positive implications about AOs are suspect as there was no control group. More importantly, it is open to question as to whether the model was a valid AO according to Ausubel's definition.

Mixed Findings (Smith and Hesse, 1969; Allen, 1970; Bayuk et al, 1970; Proger, et al, 1970; Romber and Wilson, 1973)

Smith and Hesse (1969) investigated the effect of an auditory cognitive organizer on reading comprehension of and attitude toward a biographical sketch. Three hundred and forty eleventh graders, who were either above the 67th percentile (199) or below the 34th percentile (141) on reading comprehension of the Tests of Academic Progress, were randomly assigned, within reading ability grouping to the experimental and control

groups. The experimental group listened to a taped, three minute, cognitive organizer (CO: brief general background and sequence of content). Both groups read a biographical sketch (eleventh grade level), completed a six item attitude survey (Likert-type scale, reliability .94), and a seven item posttest of main idea, detail and inference, (reliability .56). (Nothing in the sequential material of the organizer referred to any test items.) For the good readers, there were no significant differences between experimental and control groups on either the attitude survey or the posttest. They were higher than the poor readers for both measures, but significantly so only for main idea on the posttest. However, for poor readers, the experimental group was significantly better than the control group ($p < .03$) for main idea on the posttest. The researchers concluded that the organizer may interfere with the cognitive structure of the good reader, but may augment that of the poor reader. Therefore, short organizers and preview surveying of text were recommended for poor readers.

The conclusion regarding the poor readers may be more warranted, than that concerning the good readers. Two alternative explanations are suggested by the lack of significant differences (except for main idea) between the good and the poor readers: (1) the AO may have been superfluous for the good readers; (2) the poor readers may have been more effective listeners. The content sequence of the CO may have functioned as a summary, rather than as an AO, and thus may have focused attention

selectively, and provided specific purposes for reading. This is one of a small number of positive or mixed findings studies that used a control group that did not read a related introductory paragraph. Most of the studies compared treatments, and labeled one a control group.

Allen (1970) compared the effects of AOs versus introductions, in combination with either memory level or higher order questions, on learning and retention of four social studies units. Performance of different ability levels of ninth graders (above the 60th percentile or between the 20th and 59th percentiles) was also studied. The treatment included four steps: (1) the AO or introduction was read; (2) a short summary was written; (3) the unit was read; and (4) memory level or higher order questions were answered. Two posttests were administered one day and three weeks after the units were completed.

Groups, which had meaning level questions after each unit, did better on similar types of questions than on higher level questions, and visa versa, for both posttests. Except for two groups on one subtest, AOs had no significant effect. Less able groups, who had read AOs, performed better than peers who did not. AOs appeared to facilitate the performance of lower ability subjects on memory level questions, and of higher ability subjects on general concepts. As with other studies, the AO was not investigated alone. The reliability of the measuring instruments was not reported.

Bayuk et al (1970) compared the facilitative effects of an AO versus prior knowledge, versus a post organizer (PO) for different ability levels

in twelfth grade English classes. Proger et al (1970) compared the facilitative effects of four types of AOs (blank completion pretest, true-false pretest, sentence outline, paragraph abstract) for different ability levels in twelfth grade social studies classes. In both studies, AOs appeared to facilitate the performance of lower ability students on posttests, but not that of high ability students. However, a problem arises with regard to interpretation of results: did the AOs conform to Ausubel's concept?

Null Findings (Jerrolds, 1963, 1968; Neisworth, 1968; Barron, 1970; Livingston, 1970; Thelen, 1971; Bertou et al, 1972; Estes, 1972; Barron and Cooper, 1973; Feller, 1973; Lucas, 1973; Shmurak, 1974; Eastman, 1977; Santiestaban and Koran, 1977)

Jerrolds (1963, 1968) investigated the effects of AOs and modified AOs (explicit statement of main idea), with and without instruction as to their use. His 84 subjects were ninth grade suburban children, who were average or above in reading ability and intelligence. They were randomly assigned, within ability level, to one of seven groups:

I.	Instruction +	MAO	+ passage + test
II.	----------	MAO	+ passage + test
III.	Instruction +	AO	+ passage + test
IV.	----------	AO	+ passage + test
V.	----------	buffer	+ passage + test
VI.	----------	AO	------- + test
VII.	----------	---	-------- + test

Fifty-five minutes of instruction were given in the use of AOs or MAOs as subsumers, to groups I and III. The following day the treatment organizers were read by groups I, II, III, IV, and VI, and a historical introduction was read by group V. Groups I, II, III, IV, and V read a passage on espionage the next day. A posttest was given three days later (reliability .68). No significant differences (.05) were found, in terms of AO, MAO or control. The AO groups tended to have higher scores than the MAO or control groups, though not at the level of significance. For subjects with above average IQs, group I scored significantly better than group II.

Jerrolds' study was well-designed. The main question to be asked is: what is the effect of 24 hours between AO or MAO and reading the passage? Would the difference, that favored AOs have met the .05 criterion, if the posttest had been given immediately after the passage?

Barron and Cooper (1973) compared a prose AO, a graphic AO (structured overview) and a control (no pre-reading activity). Two hundred and twenty-four subjects in grades eight through eleven were randomly assigned to one of the three groups. Using a fifty-item cloze passage, based on the material to be learned (astronomy), it had been determined that the treatment passage was at their instructional reading level. The prose AO group read the AO and then the passage. The graphic AO contained the terms in the prose AO in diagramatic format. (Editor's note: for a review of structured overview in pre-reading activity, see Smith in this monograph) Its presentation was

accompanied by a discussion relating these to prior experience. The passage was read after the discussion. The control group experienced no prereading activity prior to presentation of the passage. A post-test was given twenty-four hours after the treatment (reliability .72). No differential effects were found for any AO type at the different grade levels, nor for AO versus no AO.

Either the prose AO (terms, comparisons of people and stars) or the graphic AO (terms in a diagram format accompanied by a discussion relating the terms to prior experience) or both may not have conformed to Ausubel's definition. As with Jerrolds' study, the twenty-four hour interval between passage and posttest may have affected the outcome significantly.

Shmurak (1974) studied the effect on learning of matching the type of AO to the cognitive style of the learner, as measured by the Sigel Cognitive Styles Test (categorical-inferential, descriptive-part-whole, relational). Three groups of eighth grade science students were compared: (1) AO/cognitive style match; (2) AO/cognitive style non-match; and (3) nonAO introductory passage. No significant differences were found between those reading AOs matched to their cognitive style, and those reading AOs which were not matched. In addition, there were no significant differences between AO and nonAO groups.

Discussion

The foregoing review of research has been structured in terms of positive, mixed and null findings. However, other unifying factors merit comment.

Science was the content area dominating the studies. Mathematics and social studies, though potentially fertile areas, have received far less empirical attention.

Of the studies which found significant differences, the majority of the authors concluded that there were differences based upon ability, particularly to the advantage of the less able subject (Smith and Hesse, 1969; Allen, 1970; Bayuk et al, 1970; Proger et al, 1970; West and Fensham, 1976). This finding is quite compatible with Ausubel's theory. Assuming that the less able student is less apt to have a subsuming framework, it appears that an advance organizer can provide the relevant conceptual preparation.

Without completely denigrating the positive findings described above, the efficacy of advance organizers may well be questioned because of a pervasive flaw in many of these studies. Approximately half of the studies surveyed did not have a valid control group built into the research design. These either compared the AO to other types of pre-reading activities, or compared types of AOs. Most of the studies with null findings did have control groups, adding strength to those research designs.

Although the majority of the studies appear to indicate that the advance organizer has limited or no utility in meaningful verbal learning at the secondary level, an unconditional statement cannot be made. As one reads the studies, it is difficult to determine if the AOs described conform to Ausubel's logical definition, particularly when they are not in prose form.

Uniform, operational criteria are needed in order to design research studies which begin from a common point of reference; Ausubel (1978) asserts that such guidelines do exist. Perhaps, then, researchers must be encouraged to conform to these criteria such that one can be assured that the same questions are being addressed, and that valid comparisons can be made.

Attempting to prove or disprove the efficacy of an advance organizer is akin to trying to prove a null hypothesis. It only has the potential of facilitating verbal learning; its functioning is not necessary - is not inevitable - (Lawton and Wanska, 1977). If learning is enhanced in the presence of an AO, one may conclude that a subsuming framework may have been provided where none existed before. If learning is not enhanced in the presence of an AO, one may not conclude that AOs do not function; the AO may not have been at the proper level of generality for the learner, or the learner may have had the necessary subsuming concepts prior to presentation of the AO.

Positive findings support the concept of the advance organizer; negative findings, at this state of the art, do not necessarily undermine the theory.

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The Structured Overview:
A Prereading Strategy

Anne L. Smith

Though the term "structured overview" may be relatively new (Barron, 1969), the importance of the organization of subject matter into meaningful units has been stressed by Bruner (1965), Ausubel (1965), Gagne (1977), and others. In almost every stage of instruction, the arrangement and order of concepts seems essential to learning. Organization of content is especially pertinent in the initial presentation and anticipatory phase of learning.

The use of a structured overview before reading in a given content area should clarify the terms and concepts which will be encountered by the reader. Further, the overview should serve as "a taxonomy of content" (Barron, 1969, p. 32) to be presented within a given period of time. An overview should have the effect of directing the learner to the specific terminology and the relationships between concepts while providing the student with a graphic framework to which new ideas may be affixed.

Ausubel has hypothesized that such organizing devices should enhance meaningful learning over rote memorization of isolated details which often occurs when one lacks sufficient grounding in concepts and awareness of relationships between concepts (Ausubel, 1965). Efficiency and retention should result from instruction which utilizes a meaningful organization

of content (Shepherd, 1973; Earle, 1970; Herber, 1969; Herber, 1978; Smith and Dechant, 1961).

The information-processing model of learning with its dual focus on internal structure of learning and memory and the effects of external events on learning (Gagne, 1977, pp. 51-71) has influenced the current focus of educators upon the organization of material. The format of a structured overview utilizes vocabulary organized into a diagram or graphic outline while also using verbal discussion. This is supported by learning theorists who advocate the information-processing model and believe that visual images provide support for the process of encoding or provide the reader with cues for recalling information (Gagne, 1977). Information-processing theories further posit certain cognitive strategies within the learner that enable the learner to regulate the processes of thinking, attending, learning, and remembering (Gagne, 1977). The structured overview has been developed as a means of assisting the learner to organize his existing knowledge while presenting him with a framework for new learning (Earle, 1970; Herber, 1970, 1978; Estes and Vaughan, 1978).

The research, however limited, which has been done on the structured overview as a prereading strategy is based on current theories of learning; however, the results of the studies have failed to show that the strategy does indeed facilitate learning of content material.

Purpose

The purpose of this review is to present the theoretical framework of the structured overview as a learning strategy and to discuss the research investigations that have been conducted to determine the efficacy of the structured overview as a prereading strategy in junior high and high school content area classrooms.

A structured overview utilizes the key vocabulary of a content area to provide the reader with a framework for learning given material. Research on the structured overview has tended to focus on two different types of studies. The first type of research has examined the value of using an overview within a given content area, while the second type has considered the relative effectiveness of several types of prereading strategies including advanced organizers, study guides, pattern guides, purpose-setting questions, and structured overviews. The review of the research will include both types of investigations.

Definition

In order to clarify the characteristics of a structured overview, the definition and purpose of the strategy, together with a rationale for the procedure will be given.

> A structured overview may be described as a visual and verbal representation of the key vocabulary of a learning task in relation to more inclusive or subsuming vocabulary concepts that have previously been learned by the student. It is intended to serve two purposes. First, the overview provides a structure for vocabulary instruction in content subjects

> so that it does not appear to students that they are being taught a series of unrelated or equally important words. Second, the structured overview attempts to match the effect of an advance organizer by helping the learner to relate unfamiliar material to concepts that have been previously learned (Estes, Mills, Barron, 1969, p. 41).

While the work of Ausubel concerning the "advance introduction of concepts" as a facilitator of learning has provided the basis for the structured overview, and while the overview may assume the form of an organizer (Barron, 1969), Barron's theory of a structured overview of content incorporates a strategy which differs in format from the advance organizer. (Editor's note: for a review of advance organizers, see Sledge in this monograph.) The present topic will be confined to a discussion of the structured overview, while attempting to show how an overview may be incorporated into a methodology for teaching vocabulary in a content area.

The structured overview utilizes two representations of knowledge as set forth by Bruner. The two representations have been termed iconic and symbolic (Bruner, 1967). The iconic representation, utilizing the vocabulary which arises from the content itself, may be organized into a diagrammatic outline of the content. The symbolic representation includes the verbal discussion that accompanies the diagrammatic display. Therefore, the structured overview is both a visual and a verbal display. The visual aspects highlight the key words and indicate relationships between concepts, while the verbal discussion serves to round out the

brief diagram. This format differs from Ausubel's advance organizer which utilizes only a symbolic representation in the form of an introductory passage containing major background concepts.

The use of vocabulary in the graphic overview and discussion is not viewed by Barron as a complete plan for vocabulary development. The process of promoting learning via a structured overview consists of preteaching and reinforcement. Preteaching involves the choice of vocabulary which is most relevant to key concepts, to the total content, and to the competency of the students (Barron, 1969). The specific key vocabulary should be presented within a context which will make the terms clear, while less significant words which will be encountered in textual material should also be used by both teacher and students. Reinforcement activities such as definition and categorization exercises which will help students to relate preteaching skills to later extension of the topic should be developed by the teacher and completed at various intervals by the students as either independent or small group activities. The overview functions then not only in a prereading phase, but as a referential guide throughout instruction.

Research Investigations

The organization of material has been assumed by both learning theorists and practitioners to be linked with effective learning. The present discussion will focus on the overview as a means of increasing

content retention and the effectiveness of the overview when compared with other similar strategies.

In a study by Earle (1969), utilizing a structured overview within a ninth grade mathematics class, he sought to explore the value of using vocabulary as an overview of content and to explore its possibilities as a readiness strategy. Two studies were conducted simultaneously within two schools. Two classes, matched for performance in mathematics, were chosen within each school and given a pretest. One class in each school was then randomly designated as the experimental group. The experimental groups were given structured overviews utilizing vocabulary, while the control groups followed a traditional mathematics program with vocabulary explained as it was encountered. Teachers of the experimental groups were given planning sessions for developing overviews. Preparation involved the selection of key words to be used during the three week unit and the arrangement of the words into a diagram which illustrated the relationships between ideas. During the treatment period, three types of activities were required of the experimental teachers. On the first day of the unit, teachers explained the diagram to the students, and, thereafter, referrred to the diagram periodically throughout the unit. The teachers then chose one or two key words for each day, presented the words, and discussed them with their students. The teachers further organized small study groups to allow their students to express any problems they had had with homework assignments. Post-tests which

were similar to the pre-tests were administered on the last day of the unit.

Results showed no significant mean differences between the experimental and control groups despite very positivc teacher reactions to the use of structured overviews. A meaning relationship test was administered two to three weeks after instruction. The original post-test was ordered differently and given four weeks after instruction. The meaning relationship test was constructed to test for vocabulary relationships while the post-test was given as a check for retention. Results of these two tests were not consistent. The experimental groups learned more of the mathematics relationships than the control groups while in the immediate recall post-test, all groups learned the content equally well. In the delayed retention test, one experimental group recalled computation better than the other experimental group which did not differ from the control groups.

Upon examining test data, Earle found that the tests which were constructed by the teachers were almost exclusively measures of computation and did not sample the content objectives which corresponded to the structured overviews. This type of test, together with the limited duration of the study, threaten the validity of results. The amount of time spent on the three types of activities was unevenly distributed. Vocabulary discussion on a daily basis was the predominant activity and would account for the scores of the experimental groups on the meaning relationship test. While the structured overview seems to have

provided teachers with better insight into the unit, this did not, however, transfer to the development of general course content in terms of concepts presented or students' perceptions. Despite a lack of consistent and significant results, the researcher concluded that a structured overview "may be a constructive and efficient way to provide readiness, vocabulary instruction, and goal clarification, all of which appear to facilitate learning in mathematics (Earle, 1969, p. 57)." Such statements, though tentative, seem to be unwarranted, given his results; however, Earle later conducted another study and accounted for some of the limitations of this investigation.

The purpose of the second study (Earle, 1973) was similar to his earlier research, though this study centered exclusively on one type of activity, the structured overview. The major hypothesis was that exposure to a structured overview would significantly increase student scores on criterion measures over traditional means of learning. In this study, Earle utilized three criterion measures, namely, (a) a teacher-constructed content test for each unit, (b) an experimenter-constructed vocabulary relationship test for each unit of content, and (c) a standardized test of mathematics. The study was conducted over a twelve-week period during which four units of math were introduced to seventh grade experimental and control groups. Each of the first two tests was administered upon unit completion and again after a two week interval. The content tests were analyzed by a simple analysis of covariance and the vocabulary

test was analyzed by using t-tests. The standardized test, the Mathematics Subtest of the Iowa Test of Basic Skills, given as a pre- and post-test device, was analyzed by means of analysis of variance.

Results of the study indicated that the structured overview significantly increased students' learning of relationships that exist among terms in mathematics vocabulary. The overview failed to improve scores significantly on the content tests or the standardized test, nor was there increased retention over time. While students learned relational concepts, this knowledge did not have any significant purpose and remained discrete. The researcher concluded that a structured overview may aid a teacher in determining instructional objectives. He recommended, "... the continued use and exploration of structured overviews to emphasize conceptual relationships as a specific kind of learning (Earle, 1973, p. 38)."

Two assumptions are apparent from these statements: (1) that structured overviews can indicate instructional objectives, and (2) that a specific kind of learning is desirable and justifiable. Earle's initial proposal cited the structured overview as a means of strengthening cognitive structure by aiding the organization of previous knowledge within the learner and by providing a preview of the new learning task. The overview was not intended to be an aid in writing objectives or to teach specific skills, and Earle's conclusions indicate a shift away from the original intent of the study.

Based on Earle's studies, the use of vocabulary in a structured overview seems to produce proficiency in vocabulary relationships, but does not seem to have transfer value to an overview of the content learned. Since it was assumed that the vocabulary would function as an organizer, one may raise the following questions: 1) does the vocabulary of mathematics allow for broad transfer across content, or do terms have more specific and functional meanings for students? 2) is vocabulary the appropriate unit to employ in an overview? and 3) does mathematics lend itself to an advanced organizational framework?

As hypothesized in Barron's theoretical paper, knowledge of key vocabulary should increase learning. Weiss and Fine (1966) conducted a study to examine the question of pre-teaching of content vocabulary before showing an instructional filmstrip. The researchers hypothesized that prior familiarization with key terminology should increase informational learning, while they also investigated the efficiency of such a procedure. They argued that since such a process takes time, it would be more effective to merely expose students to the film twice, rather than utilize a vocabulary preteaching session plus the film itself.

The research, conducted with high school students in Boston, involved the use of three groups: (1) an experimental group which received familiarization training followed by the film presentation; (2) a control group which saw the film once; and (3) another control group which viewed the film twice. The three groups were shown an edited

version of a filmstrip on the organization of the United Nations. The experimental group was given training immediately before viewing the film, but was not told that they would see a film until after the training session. The control groups were shown the film without previous familiarization. Before seeing the film all groups were told that they would be given a twenty item multiple choice test of film content plus five additional questions on the U.N. to check for general knowledge of related information not shown in the film. The test was given immediately after the film was presented.

Briefing before the film consisted of exposure to six frames of the twenty-four content frames in the filmstrip, and each of the six frames represented a major subdivision of the U.N. A synchronized recording indicated the subdivision name for each frame as it was shown. The frames were then presented again without the recorded terminology. The subjects were given eight seconds after each frame to indicate on paper the appropriate name for each frame. This procedure of listening followed by an answering trial was done six times with the order of items changed between one listening-answering trial and the next trial. The familiarization session took a total of eleven minutes and was equal in time to a single showing of the film.

Results of the post-tests indicated that the experimental group given prior training was superior to the control group which saw the film once. However, the experimental group did not differ significantly

from the control group which viewed the film twice. The experimental group also found the material less interesting than either control group. The investigator concluded that preparation for material does facilitate single-type presentations; however, two exposures to material is as effective as a preparatory phase and one presentation. The latter conclusions make one question the value of expending time in preparing preinstructional materials over extended practice using the specific material. Previous exposure to concepts may have a limiting effect upon interest in target materials.

The limited number of studies which examine the use of a structured overview within a given content area have failed to indicate that the structured overview provides a broad view of content, or provides the learner with a cognitive structure which is reflected in knowledge of the content. The following studies move from the previous focus to a comparison of several prereading strategies to determine the superiority of one type of strategy over another.

A study by Estes, Mills, and Barron (1969) was designed to determine whether the use of three different types of prereading strategies would indicate the superiority of one technique. The researchers proposed that the structured overview would function in a manner similar to an advance organizer and would enhance learning over purpose setting questions and an advance organizer. Two studies, utilizing ninth grade English students and tenth grade biology students, were then conducted.

In the study using English students, no statistically significant difference was reported for any of the three hypotheses and the researchers suspended judgment on the three hypotheses. Results of the study showed that the group receiving the structured overview was better than the group receiving purpose-setting questions. A difference between the experimental group using the structured overview and the control group receiving no preparation was significant, but might be predicted. The researchers did question whether the concepts used in the first study were within the previous experience of the students and whether there are content areas in which the use of a structured overview appears justified. The conclusions are tentative and indicate the need of further research to determine both the conditions and content in which a structured overview will aid learning.

Hash (1974) examined the effects of three strategies upon (1) social studies achievement, (2) reading comprehension, (3) critical reading, and (4) attitudes toward social studies in a study conducted at the junior high level. The three strategies included structured overviews, three level reading guides, and vocabulary exercises. Fourteen teachers volunteered to participate in a two-week summer workshop in the implementation of reading skill materials. A Solomon Four-Group Design was used to study the effects of implementing materials in fifty-six seventh, eighth, and ninth grade classes. Classes were randomly assigned to control or experimental groups and pre- or post-conditions. The three treatment strategies were administered once a week for sixteen weeks.

Tests given to the students included the Stanford Achievement Test - Advanced Social Studies Stanford Achievement Test - Advanced Paragraph Meaning, Cornell Critical Reading Test, and Junior High School Attitude Survey - Social Studies, as well as teacher-constructed unit tests. Effects upon the teachers were measured by three Likert-type attitude instruments and one skills preference instrument. Tests for significance, which analyzed class scores, included multivariate analysis of variance for the Stanford and Cornell tests, a univariate analysis of variance for student attitudes, and t-tests of uncorrelated means for the teacher-made tests. Teacher attitudes were analyzed through tests of correlated means while a chi square was used to measure skills preference. Students' test performance failed to yield any statistically significant results. Two of the three Likert-type attitude scales for teachers, which measured teacher's attitudes toward reading instruction and methodology, were statistically significant.

The use of the structured overview, reading guides, and vocabulary exercises did not affect student performance on any of the four criterion measures. Although teachers' attitudes toward reading instruction and methodology in content areas were positive, their attitudes did not affect student performance and, as such, added little support to the study. Since the Solomon Four Design should have controlled for internal validity, one may question the consistency of teachers across the fifty-six classes. Further, one may question the suitability of using

standardized tests to measure the effectiveness of strategies for organizing units of content. The teacher-constructed tests, used only as supporting data, may have been planned and used more advantageously. The magnitude of the study, with an emphasis on testing devices, may have had an effect upon overall results of the investigation.

Another study reported by Williams (1973) was designed to study the effect of three instructional strategies — structured overview (SO), level guides (LG), and pattern guides (PG) — upon true/false measures of three levels of comprehension. The three levels of comprehension were drawn from Herber's (1970) discussion of literal, interpretative, and applied levels of understanding. Second semester seniors in high school were randomly assigned to one of three combinations of strategies in social studies, literature, and science materials. The first group was given all three strategies (SO, LG, PG); the second group received two strategies (SO, PG); and a control group received no organizers. Results of a multivariate analysis of variance indicated that the students in the second group were significantly higher than the first group, which received all three guides. The third group was not significantly higher than the first group. The three groups receiving the treatments did not differ significantly from the control group.

Williams concluded that the study suggests that the three strategies appear to have an effect on comprehension after students have had practice; that the combined use of structured overview and level guide most signi-

ficantly increased a student's performance; and that the use of all three strategies by one group may have hindered learning by overloading students with organizing materials. In light of the findings, the first conclusion seems questionable, while the last statement indicates a key weakness in the study. The combination of strategies is unfortunate, and the significance of the group which received the overview and level guide may only indicate that students could cope more easily with two rather than with three strategies. While being readily scored, the true/false questions may not have been the most effective measures of levels of comprehension. However, the lack of a pre-test comparison, together with the interaction effects of the combined strategies, pose the most serious threats to the validity of the study.

The three studies which examine the effectiveness of several prereading strategies have all failed to indicate that any prereading technique significantly increases learning over traditional methods of instruction. Neither does the structured overview seem to be superior to any of the other types of techniques utilized in the above studies. The sheer complexity of the studies undertaken by Hash (1974) and Williams (1973) may account for some of the lack of significance in the particular studies. However, problems with appropriate design and control, types of content, and clear delineation of strategies are apparent in the three studies cited.

Conclusions

From the investigations discussed in this paper, the following conclusions concerning the structured overview seem appropriate:

1) Instructional situations which provide some means of pre-learning are more effective than single presentations of material.

2) When presentational material is well organized, the addition of an overview may result in a decrease of learning by interrupting continuity. Use of two or three organizers may also have the same effect by overloading the reader with conceptual information.

3) A structured overview may be more appropriate for some types of material than for others. The structure inherent within mathematics, and the specificity of mathematic vocabulary, may not require the added dimension of an overview.

4) The use of single vocabulary terms may not form an appropriate unit of language in building an overview which has meaning to students. Diagrams or outlines which utilize phrases or short sentences may provide the learner with more cues to organization of content.

5) The construction of an overview by the teacher and the subsequent presentation of the structure to students may only function as another learning task for students. Estes and Vaughan (1977, p. 148) insist that the overview should be developed concurrently by both teacher and students since the inductive nature of the process itself is critical to the strategy. However, this has yet to be experimentally

investigated. Since the concept of an overview has a basis in learning theory, and the studies cited have failed to note its significance, a move to students' participation in the construction of a structured overview seems warranted.

From the studies reviewed in this paper, it is evident that research examining the effectiveness of the structured overview is limited, and the conclusions, at best, are tentative. Since the concept of the overview is rooted in sound learning theory, further exploration and modification of the strategy is needed. As suggested by Estes and Vaughan, the successful utilization of an overview may hinge on student participation in its construction. Future research which takes this direction and extends present data on the structured overview as a prereading strategy will be welcomed by content area teachers and reading professionals alike.

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